U. S. FOREST SERVICE
RESEARCH NOTE PSW- 64

PACIFIC SOUTHWEST
FOREST & RANGE EXPERIMENT STATION
Berkeley, California
1965

INTERMOUNTAIN STATION
Central Reference File
No. 0.73

# A Computer System for Information Revision and Manuscript Assembly (IRMA)

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ABSTRACT: IRMA, a Fortran IV computer program designed for an IBM 7094 installation, provides an efficient procedure for revising or updating manuscripts. Magnetic tape storage is used for subsequent revision.

The value of many documents, such as technical manuals for research and development work, depends on prompt, accurate updating. A problem of this nature arose during the development of analytical techniques for timber quality research at the Pacific Southwest Station. While writing a computer program to do multivariate regression, we found that the program description was a sizable manuscript which needed frequent changes. It was important to document the changes as soon as they were made and to provide accurate up-to-date drafts of the entire description for the research staff and programers. The many changes made typewriter revision a costly, laborious chore. To insure a rapid means for maintaining an accurate description, we developed a computer system. We named it IRMA (Information Revision and Manuscript Assembly System).

IRMA provides a fast, easily used means of revising or correcting sizable manuscripts with equipment generally available at an IBM 7094 installation. It may be useful in updating other types of documents. This note describes briefly the operation of IRMA, some uses to which it has been put, and its limitations and possible extension. [1]

Systems of a similar nature have been used previously. U. S. Forest Service Research Paper PSW-13, 1964, by L. R. Grosenbaugh was produced with a computer process. IBM used a computer to update the text and control page and line format for its forms,

[1] Source and object decks are available through SHARE or the University of California Computer Center Library, at Berkeley. A detailed description of the program is given in "Information Revision and Manuscript Assembly System Operating Guide" by H. Dean Claxton (office report; address requests to the author at Pacific SW. Forest and Range Expt. Sta., U.S. Forest Serv., P. O. Box 245, Berkeley, Calif. 94701).

C28-6515, Fortran Language for 360 Operating System. Commercial firms are using computers to set type for printing presses. Furthermore, machines incorporating typewriters controlled by punched or magnetic tape are commercially available to do some jobs of this nature. But for some purposes IRMA may offer advantages in ease of use, rapid turn around for large jobs, and low cost.

## OPERATION

IRMA uses a deck of cards to produce the first draft of a manuscript. Card punching on a key punch machine is analogous to the first typing of a draft.

All manuscripts require decisions as to general format and specific supplements. These decisions are given to IRMA as general and specific instructions on punched cards. General instructions will cover such items as the width of text, number of lines per page, the spacing, and the indentation. Specific instructions can be used to designate paragraphs, start new lines or new pages, center a title, introduce blank lines, tab to a specified location, copy cards, or produce an outline format. From the punched cards containing these instructions and the text, IRMA produces a printed copy of the manuscript, and stores the text and instructions on magnetic tape.

IRMA will revise the manuscript using the magnetic tape and revision instructions on new punched cards. These instructions specify what to change and how to change it. Material may be deleted from or added to the text at any point, without regard for the space occupied. The entire text from the point of revision on will be adjusted to eliminate gaps or crowding. Each revision produces a complete new copy and a new section of tape on the tape reel. Old drafts can be saved or eliminated from the magnetic tape as desired.

## EXAMPLES

The computer program description, for which we developed IRMA, is about 50 pages long and has been revised 5 times to date. An important feature in this case was the fact that no typographical errors could be introduced in sections that were not revised.

IRMA was also used for the preparation of a doctoral dissertation at the University of California by James R. Wallis. His manuscript was revised 10 times, and was increased in length from 60 pages to 140 pages during the revisions. The relative ease of use and speed in producing corrected copies for review were considered important factors in this case.

IRMA may also prove valuable in issuing catalogues, stock records, and handbooks, where frequent updating is necessary and it is desirable to issue the entire document as a unit.

## LIMITATIONS

The program is available in Fortran IV for IBM 7094.

Output is limited to the available character set (currently 48). The character limitation is not inherent in the program, but in the machinery. When an expanded character set is available, the program should not require modification. The character limitation is particularly severe in papers with extensive mathematical notations. We found it convenient to follow Fortran conventions in these cases.

Running time may vary. Tape hanging is variable, and a revision run depends upon the number of revisions and the extent of the revision; location of the manuscript on the tape reel is also a factor. An estimate of 0.02 minutes per page appears to be a reasonable average for the 7094 Fortran IV version.

Because of the fixed cost of setup time, and the relative speed with which short articles can be typed, we feel that other methods may be more desirable for manuscripts shorter than 10 pages.

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The Author. . .

H. DEAN CLAXTON, native of Allensville, Ky., was graduated from Oklahoma State University in 1955 with a forestry degree, and earned a master of forestry degree at Duke University in 1958. Since joining the Pacific Southwest Station staff in 1961, he has been studying problems in timber quality.